

## Plate Tectonics Webquest

### Objectives

1. Explain **plate tectonics** as the mechanism of continental movement and sea floor changes;
2. List the three types of **plate boundaries** and explain the **forces** associated with each;
3. List and draw the three **fault types** and identify the **forces** associated with each;
4. **Safely** use laptops in class - return materials neatly and promptly.

### Introduction

The “Theory of Plate Tectonics” seems like common sense to us now, but it was a mystery in science until **less than 100 years ago!** Although everyone who looks at a map can see that South America and Africa look like two puzzle pieces that can fit together, the astronomer Alfred Wegener proposed an explanation called continental drift in 1912. We now know that the mechanism he proposed was flawed, but he was correct that the continents have always been moving!



### Brainstorm

While you are waiting for your computer to start, brainstorm the things you know about plate tectonics. Not trying is the only “wrong” answer – give this an honest effort:

Plate Tectonics

**Your task:** use the laptops to research plate tectonics using the website listed. Good luck! ☺  
Find the course website from the Wiki: <http://msjohnsonGWHS.wikispaces.com>  
Look on the left-hand side and click AP Envi Science, then “Webquest-Plate Tectonics”  
Follow the directions!!

**Part 1: Structure of the Earth**

1) Complete the table below:

<b>Name of Layer</b> (from surface to center)	<b>Thickness (km)</b>	<b>Thickness (miles)</b> (# km x 0.62)	<b>It is made of these elements or minerals:</b>
Crust	5 to 40 km	3 to 25 miles	Alumino-silicates
Outer Core			

2) The radius of the moon is about 1,075 miles thick. Would the moon fit inside the inner core?  
The outer core?

3) What drives plate tectonics? In what layer(s) does this occur?

**Part 2: History of Plate Tectonics**

4) What is the definition of “plate tectonics”?

5) List and explain 2 of the 4 pieces of evidence for plate tectonics.

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**Part 3: Plates**

6) There are two types of crust on Earth. List the name, average thickness, and density of each.  
Circle the name of the denser type of crust.

<b>Name</b>	<b>Thickness range (km)</b>	<b>Density (g/cm<sup>3</sup>)</b>

**Part 4: Plate Boundaries**

- 7) A) Draw a **divergent plate boundary** and label the (1) forces (as thick arrows), (2) crust, (3) lithosphere, (4) magma, and (5) ridge.

B) An example of a real **divergent** plate boundary is \_\_\_\_\_ and the plates move \_\_\_\_\_ one another.

- 8) A) Draw a **convergent plate boundary** and label the (1) forces (as thick arrows), (2) oceanic crust, (3) continental crust, (4) trench, (5) mountains, and (6) earthquakes.

B) An example of a real **convergent** plate boundary is \_\_\_\_\_ and the plates move \_\_\_\_\_ one another.

- 9) A) Draw a **conservative**, or \_\_\_\_\_, plate boundary and label the (1) forces (as thick arrows), (2) lithosphere, (3) transform fault, and (4) fracture zone.

B) An example of a real **transform** plate boundary is \_\_\_\_\_ and the plates move \_\_\_\_\_ one another.

**Part 5: Forces in the Earth**

10) Guess which stress matches each plate boundary. (Hint: look at the direction of forces!)

Type of Plate Boundary	Name of Stress	Direction of the forces (example: toward one another)
Divergent		
Convergent		
Conservative/Transform		

**Part 6: Faults**

11) Define **fault**:

12) In the table below, list the 3 fault types and predict which plate boundary they are most likely to occur near:

Type of fault	Plate boundary they probably occur near.

13) (Compare and contrast) In complete sentences, describe how “normal” and “reverse” faults are **similar** and how they are **different**.